

**CLAIMS:**

What is claimed is:

1. A method in a data processing system for processing  
5 a parity error, the method comprising:  
responsive to an occurrence of a parity error,  
storing processor information to form stored processor  
information;  
determining whether the parity error is a  
10 recoverable parity error using the stored processor  
information; and  
responsive to the parity error being a recoverable  
parity error, performing a recovery action.
- 15 2. The method of claim 1, wherein the performing step  
comprising:  
if an error type for the parity error is one of a  
level one data cache error or a level one cache tag  
error, incrementing an error count associated with the  
20 error type and invalidating the level one data cache; and  
if the error count associated with the error type is  
greater than a threshold, disabling the failing portion  
of the level one data cache or data cache tag.
- 25 3. The method of claim 1, wherein the performing step  
comprises:  
if an error type is a translation lookaside buffer  
error, incrementing a translation lookaside buffer error  
count and invalidating all entries in a translation  
30 lookaside buffer.

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4. The method of claim 3, wherein the performing step further comprises:

if the translation lookaside buffer error count is greater than a threshold, disabling the failing portion  
5 of the translation lookaside buffer.

5. The method of claim 1, wherein the performing step comprises:

if an error type is an effective to real address  
10 translation error, incrementing an error count and  
invalidating selected entries within a translation  
lookaside buffer.

6. The method of claim 5, wherein the selected entries  
15 are every fourth entry within the translation lookaside  
buffer.

7. The method of claim 5, wherein the performing step further comprises:

20 if the effective to real address translation error  
count is greater than a threshold, disabling the failing  
portion of the effective to real address translation  
unit.

25 8. The method of claim 1, wherein the stored processor  
information includes at least one error state.

9. The method of claim 1 further comprising:

if the parity error is a non-recoverable parity  
30 error generating an indication of the non-recoverable  
interrupt error.

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10. A method in a data processing system for error recovery, the method comprising:

saving processor information from a processor in response to detecting an occurrence of an error

5 associated with the processor;

determining whether the error is a recoverable error; and

responsive to the error being a recoverable error, performing a selected action.

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11. The method of claim 10, wherein the processor information includes the recoverable state of the processor at the time of the interrupt and wherein the determining step comprises:

15 determining whether the interrupt is recoverable.

12. The method of claim 10, wherein stored processor information includes at least one error state.

20 13. The method of claim 10, wherein the error is a parity error.

14. The method of claim 10, wherein the performing step comprising:

25 if an error type for the error is one of a level one data cache error or a level one cache tag error, incrementing an error count and invalidating the level one data cache; and

30 if the error count is greater than a threshold, disabling the failing portion of the level one data cache.

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15. The method of claim 10, wherein the performing step comprises:

if an error type is a translation lookaside buffer error, incrementing a translation lookaside buffer error  
5 count and invalidating all entries in a translation lookaside buffer.

16. The method of claim 13 wherein the performing step further comprises:

10 if the error count is greater than a threshold, disabling the failing portion of the translation lookaside buffer.

17. The method of claim 10, wherein the performing step  
15 comprises:

if an error type is an effective to real address translation error, incrementing an effective to real address translation error count and invalidating selected entries within a translation lookaside buffer.

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18. The method of claim 17, wherein the selected entries are every fourth entry within the translation lookaside buffer.

25 19. The method of claim 17, wherein the performing step further comprises:

if the error count is greater than a threshold, disabling the failing portion of the effective to real address translation unit.

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a memory connected to the bus system, wherein the

a processing unit connected to the bus system, wherein the processing unit includes hardware logic to save processor information to form stored processor information in response to the detection of a parity error; branch to the machine check interrupt vector, a runtime system firmware executes by the processing unit at the interrupt vector to determine whether the parity error is a recoverable parity error using the stored processor information; and perform a recovery action in response to the parity error being a recoverable parity error.

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22. The data processing system of claim 20, wherein the bus system includes a primary bus and a secondary bus.

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23. The data processing system of claim 20, wherein the processing unit includes a plurality of processors.

24. The data processing system of claim 20, wherein the communications unit is one of a modem and Ethernet adapter.

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25. A data processing system comprising:  
a bus system;  
a communications unit connected to the bus system;  
a memory connected to the bus system, wherein the  
5 memory includes a set of instructions; and  
a processing unit connected to the bus system,  
wherein the processing unit includes hardware logic to  
save processor information from a processor in response  
to detecting an occurrence of an error associated with  
10 the processor; branch to the machine check interrupt  
vector, a runtime system firmware executing on the  
processing unit at the interrupt vector to determine  
whether the error is a recoverable error; and perform a  
selected action in response to the error being a  
15 recoverable error.
26. The data processing system of claim 25, wherein the  
bus system is a single bus.
- 20 27. The data processing system of claim 25, wherein the  
bus system includes a primary bus and a secondary bus.
28. The data processing system of claim 25, wherein the  
processing unit includes a plurality of processors.  
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29. The data processing system of claim 25, wherein the  
communications unit is one of a modem and Ethernet  
adapter.

30. A data processing system for processing a parity error, the data processing system comprising:

storing means, responsive to an occurrence of a parity error, for storing processor information to form  
5 stored processor information;

determining means for determining whether the parity error is a recoverable parity error using the stored processor information; and

performing means, responsive to the parity error  
10 being a recoverable parity error, for performing a recovery action.

31. The data processing system of claim 30, wherein the performing means comprises:

15 incrementing means, if an error type for the parity error is one of a level one data cache error or a level one cache tag error, for incrementing an error count associated with the error type and invalidating the level one data cache; and

20 disabling means, if the error count is greater than a threshold, for disabling the failing portion of the level one data cache.

32. The data processing system of claim 30, wherein the  
25 performing means comprises:

means for incrementing a translation lookaside buffer error count and invalidating all entries in a translation lookaside buffer if an error type is a translation lookaside buffer error.

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33. The data processing system of claim 32, wherein the performing means further comprises:

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performing means, responsive to the error being a recoverable error, for performing a selected action.

incrementing means, if an error type for the error is one of a level one data cache error or a level one cache tag error, for incrementing a D-cache or D-cache tag error count and invalidating the level one data cache; and

disabling means, if the error count is greater than a threshold, for disabling the failing portion of the level one data cache.

- 5 44. The data processing system of claim 39, wherein the performing means comprises:

means for incrementing a translation lookaside buffer error count and invalidating all entries in a translation lookaside buffer if an error type is a  
10 translation lookaside buffer error.

45. The data processing system of claim 44, wherein the performing means further comprises:

means for disabling the failing portion of the  
15 translation lookaside buffer if the error count is greater than a threshold.

46. The data processing system of claim 39, wherein the performing means comprises:

20 means for incrementing a effective to real address translation error count and invalidating selected entries within a translation lookaside buffer if an error type is an effective to real address translation error.

- 25 47. The data processing system of claim 46, wherein the selected entries are every fourth entry within the translation lookaside buffer.

48. The data processing system of claim 46, wherein the  
30 performing means further comprises:

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means for disabling the failing portion of the effective to real address translation unit if the error count is greater than a threshold.

- 5 49. A computer program product in a computer readable medium for processing a parity error, the computer program product comprising:

first instructions for determining whether the parity error is a recoverable parity error using the  
10 stored processor information; and  
second instructions, responsive to the parity error being a recoverable parity error, for performing a recovery action.

- 15 50. A computer program product in a computer readable medium for error recovery, the computer program product comprising:

first instructions for determining whether the error is a recoverable error; and  
20 second instructions, responsive to the error being a recoverable error, for performing a selected action.

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